0.a. Goal

Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

0.b. Target

Target 4.a: Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

0.c. Indicator

Indicator 4.a.1: Proportion of schools offering basic services, by type of service

0.e. Metadata update

January 2021

0.f. Related indicators

6.1, 6.2, 7.1, 9.c, 17.8

0.g. International organisations(s) responsible for global monitoring

UNESCO Institute for Statistics (UNESCO-UIS)

1.a. Organisation

UNESCO Institute for Statistics (UNESCO-UIS)

2.a. Definition and concepts

Definitions:

The percentage of schools by level of education (primary education) with access to the given facility or service.

Concepts:

Electricity: Regularly and readily available sources of power (e.g. grid/mains connection, wind, water, solar and fuel-powered generator, etc.) that enable the adequate and sustainable use of ICT infrastructure for educational purposes.

Internet for pedagogical purposes: Internet that is available for enhancing teaching and learning and is accessible by pupils. Internet is defined as a worldwide interconnected computer network, which provides pupils access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (i.e. not assumed to be only via a computer) and thus can also be accessed by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed narrowband, fixed broadband, or via mobile network.

Computers for pedagogical use: Use of computers to support course delivery or independent teaching and learning needs. This may include activities using computers or the Internet to meet information needs for research purposes; develop presentations; perform hands-on exercises and experiments; share information; and participate in online discussion forums for educational purposes. A computer is a programmable electronic device that can store, retrieve and process data, as well as share information in a highly-structured manner. It performs high-speed mathematical or logical operations according to a set of instructions or algorithms. Computers include the following types:

- A desktop computer usually remains fixed in one place; normally the user is placed in front of it, behind the keyboard;

- A laptop computer is small enough to carry and usually enables the same tasks as a desktop computer; it includes notebooks and netbooks but does not include tablets and similar handheld devices; and

- A tablet (or similar handheld computer) is a computer that is integrated into a flat touch screen, operated by touching the screen rather than using a physical keyboard.

Adapted infrastructure is defined as any built environment related to education facilities that are accessible to all users, including those with different types of disability, to be able to gain access to use and exit from them. Accessibility includes ease of independent approach, entry, evacuation and/or use of a building and its services and facilities (such as water and sanitation), by all of the building's potential users with an assurance of individual health, safety and welfare during the course of those activities.

Adapted materials include learning materials and assistive products that enable students and teachers with disabilities/functioning limitations to access learning and to participate fully in the school environment.

Accessible learning materials include textbooks, instructional materials, assessments and other materials that are available and provided in appropriate formats such as audio, braille, sign language and simplified formats that can be used by students and teachers with disabilities/functioning limitations.

Basic drinking water is defined as a functional drinking water source (MDG ‘improved’ categories) on or near the premises and water points accessible to all users during school hours.

Basic sanitation facilities are defined as functional sanitation facilities (MDG ‘improved’ categories) separated for males and females on or near the premises.

Basic handwashing facilities are defined as functional handwashing facilities, with soap and water available to all girls and boys.

3.a. Data sources

(1) Administrative data from schools and other providers of education or training

(2) Cross-national learning assessments

3.b. Data collection method

For administrative sources:

The UNESCO Institute for Statistics produces time series based on data reported by Ministries of Education or National Statistical Offices. The data are gathered through the annual Survey of Formal Education (on access to electricity, drinking water, sanitation and handwashing facilities) and through the Survey on ICTs in Education (on access to electricity, Internet and computers). Data on adapted infrastructure are not collected currently. Countries are asked to report data according to the levels of education defined in the International Standard Classification of Education (ISCED) to ensure international comparability of resulting indicators.

The data received are validated using electronic error detection systems that check for arithmetic errors and inconsistencies and trend analysis for implausible results. Queries are taken up with the country representatives reporting the data so that corrections can be made (of errors) or explanations given (of implausible but correct results). During this process countries are also encouraged to provide estimates for missing or incomplete data items.

In addition, countries also have an opportunity to see and comment on the main indicators the UIS produces in an annual “country review” of indicators.

For cross-national learning assessments:

Data is acquired from the administrators of cross-national assessment; typically, these are available for download publically. UIS analyses this data to provide estimates of the indicator. When there is more than one data point available for a given level of schooling, an average is used as the indicator. Annexe Table 2 presents the questionnaire used to collect data in the cross-national assessments included.

3.c. Data collection calendar

For administrative sources: Annual UIS survey (latest launched in October 2019) and UOE survey (latest launched in June 2019).

For cross-national assessments: as data is released publically.

3.d. Data release calendar

Biannual UIS data release (February and September).

3.e. Data providers

For administrative sources: Ministries of Education and/or National Statistical Offices.

For cross-national learning assessments: International student assessment programme administrators.

3.f. Data compilers

UNESCO Institute for Statistics

4.a. Rationale

The indicator measures access in schools to key basic services and facilities necessary to ensure a safe and effective learning environment for all students.

A high value indicates that schools have good access to the relevant services and facilities. Ideally each school should have access to all these services and facilities.

4.b. Comment and limitations

The indicator measures the existence in schools of the given service or facility but not its quality or operational state.

4.c. Method of computation

The number of schools in a given level of education with access to the relevant facilities is expressed as a percentage of all schools at that level of education.

PSn,f = Sn,f

Sn

where:

PSn,f = percentage of schools at level n of education with access to facility f

Sn,f = schools at level n of education with access to facility f

Sn = total number of schools at level n of education

4.f. Treatment of missing values (i) at country level and (ii) at regional level

• At country level

The UIS estimates certain key items of data that may be missing or incomplete in order to have publishable estimates at the country level. Where this is not possible the UIS imputes missing values for use only for calculating regional and global aggregates.

In all cases estimates are based on evidence from the country itself (eg information from the data provider on the size of the missing component, via correspondence, publications or data on the Ministry's or National Statistical Office's Webpage, or via surveys conducted by other organizations) or on data from the country for a previous year.

Where data are available for a country for both an earlier and a more recent year than the missing year, a simple linear interpolation is made. Where data are only available for an earlier year, the most recent value is used as an estimate. Similarly, where data are only available for a more recent year, the last value is used as an estimate.

Where the relevant data are not available at all for a country, estimates may be based on another variable which is clearly linked to the item being estimated. For example, schools with access to basic services or facilities may be estimated from the total number of schools.

Where no data are available for the country in any year that can inform the estimate, the unweighted average for the region in which the country lies is used.

Currently no estimates are made for this indicator for the purpose of having publishable country-level data.

• At regional and global levels

Regional and global aggregates are derived from both publishable and imputed national data. Publishable data are the data submitted to the UIS by Member States or the result of an explicit estimation made by the Institute based on pre-determined standards. In both cases, these data are sent to Member States for review before they are considered publishable by the UIS.

When data are not available for all countries, the UIS imputes national data for the sole purpose of calculating regional averages. These imputed data are not published nor otherwise disseminated.

The regional and global aggregates are then calculated as weighted averages using the denominator of the indicator as the weight.

4.g. Regional aggregations

Regional and global aggregates are calculated as weighted averages using the denominator of the indicator as the weight. As described previously, where publishable data are not available for a given country or year, values are imputed for the purpose of calculating the regional and global aggregates.

5. Data availability and disaggregation

For administrative data sources:

Data availability:

140 countries for electricity, 113 countrie1 for computers, 106 countries for Internet, 109 countries for water, 103 countries for sanitation, 105 countries for hand-washing facilities and 50 countries for adapted infrastructure that have at least one data point in the period 2010-2019.

Time series:

2000-2019

Disaggregation:

By level of education.

For student assessment sources:

Annex Table 1 presents indicator availability by suggested cross-national learning assessment included in the data as well as number of countries which participate in the assessment programme.

6. Comparability/deviation from international standards

Sources of discrepancies:

Nationally-published figures may differ from the international ones because of differences between national education systems and the International Standard Classification of Education (ISCED); or differences in coverage (i.e. the extent to which different types of education – e.g. private or special education – are included in one rather than the other).

7. References and Documentation

URL:

http://www.uis.unesco.org/Pages/default.aspx

References:

The proportion of schools with access to electricity, the Internet for pedagogical purposes and computers for pedagogical purposes: see Guide to Measuring Information and Communication Technologies (ICT) in Education, UIS Technical Paper No. 2.

WASH Monitoring Indicators: http://www.unicef.org/wash/files/4_WSSCC_JMP_Fact_Sheets_4_UK_LoRes.pdf

UIS Questionnaires on Statistics of Information and Communication Technologies (ICT) in Education and the Regional Module for Africa: http://www.uis.unesco.org/UISQuestionnaires/Pages/default.aspx.

Annexe: methods used to estimate indicator values using cross-national assessments

Cross national assessments are sample-based and, as such, provide estimates of the proportion of schools with the given facility. Estimation methods followed those suggested by the respective organization providing the cross-national assessment data. All surveys utilized a two-stage sampling procedure, randomly selecting schools and within those classes or students. School-level (first stage) data was used to estimate the percentages of schools with the given facilities. Data was weighted by school sampling weights. The population which the sample of schools represented are presented in Annexe Table 1.

Annex Table 1. Data on school environment indicators collected by suggested cross-national learning assessment

			Data collected on the following						
Assessment	Number of participants (includes sub-national entities in some cases; data may not be available for all countries for a given indicator)	Target population	electricity	internet for pedagogical purposes	computers for pedagogical purposes	adapted infrastructure for students with disabilities	basic drinking water	single-sex basic sanitation facilities	basic hand-washing facilities

PISA 2018	80	secondary schools with 15 year-old students		X	X				
TIMSS 2015	54 4th grade; 46 8th grade	schools with 8th grade; schools with 4th grade			X				
PASEC 2014	10 both grades	schools with 2nd grade; schools with 6th grade	X				X		
LLECE (TERCE) 2013	16 both grades	schools with 3rd grade; schools with 6th grade	X	X	X		X		

Annexe Table 2. School questionnaire items related to SDG 4.a.1

Survey	Population	Questionnaire item	SDG 4.a.1 sub-indicator
LLECE 2013	schools with 3rd grade students; schools with 6th grade students	¿Con cuáles de estos servicios cuenta la escuela? Luz eléctrica. Sí / No Agua potable. Sí / No	Electricity and basic drinking water
		¿Cuántos computadores hay en la escuela para uso de los estudiantes? Con conexión a Internet: No hay / Entre 1 y 10 / Entre 11 y 20 / Entre 21 y 30 / Más de 30 Sin conexión a Internet: No hay / Entre 1 y 10 / Entre 11 y 20 / Entre 21 y 30 / Más de 30	Internet for pedagogical purposes; computers for pedagogical purposes
PASEC 2014	schools with 2nd grade; schools with 6th grade	65.Is there in the school...? Electricity: yes/no Piped-in water: yes/no Another source of drinking water (well, borehole…): yes/no	Electricity; drinking water
PISA 2018	secondary schools with 15 year-old students	The goal of the following set of questions is to gather information about the student-computer ratio for students in the <national modal grade for 15-year-olds> at your school. (Please enter a number for each response. Enter “0” (zero) if there are none.) At your school, what is the total number of students in the	Internet for pedagogical purposes; computers for pedagogical purposes

		<national modal grade for 15-year-olds>? Approximately, how many computers are available for these students for educational purposes? Approximately, how many of these computers are connected to the Internet/World Wide Web?	
TIMSS 2015 4th & 8th grade	Math and science teachers' classes of 4th grade & 8th grade students (can be aggregated to school level)	Do the students in this class have computers (including tablets) available to use during their mathematics lessons? Yes / No Do the students in this class have computers (including tablets) available to use during their science lessons? Yes / No	Computers for pedagogic use